ROUTE CONCEPT REPORT

ROUTE 80

Prepared under the direction of:

for CECIL L. SMITH, Chief Date
Transportation Planning, District 4

Recommended Approval:

7-12-85
JOHN VOSTREZ Date
Deputy District Director
Planning and Programming

I approve this Route Concept Report as the guide toward which today's decisions and/or recommendations should be directed.

Approved:

7/22/85
BURCH C. BACHTOLD Date
District Director of Transportation

Approved:

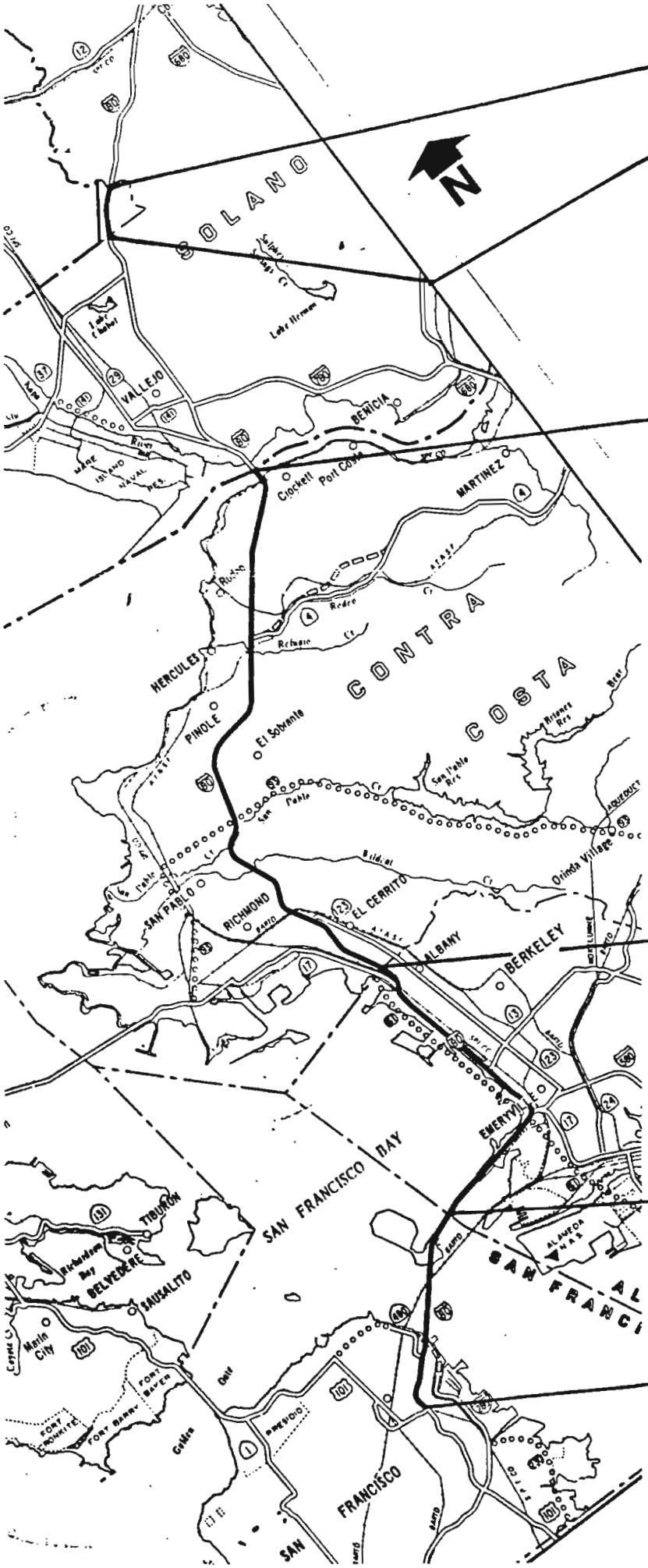
8-26-86
D. L. WIEMAN, Chief Date
Division of Transportation
Planning

Approved:

For 8/21/86
ALLAN HENDRIX, Chief Date
Division of Highways and
Programming

Approved:

8/8/86
VINCE PAUL, Chief Date
Division or Project
Development



DONE BY	NAP 8.004
DISTRICT 10	NAP 6.814

C	CC 14.14 CC 0.00
B	ALA 8.04 ALA 0.00
A	SF 8.85 SF 3.95

LOCATION MAP

Route 80

SUMMARY

ROUTE CONCEPT REPORT
ROUTE I-80

(SF 3.95 to Sol 0.93)

This report defines the concept for development of Route I-80 in District 4 for a 20-year planning period (1985-2005).

Segment A: SF 3.95-8.85 (Division Street - ALA/SF Co Line)
8-10 lane freeway F-15

Segment B: ALA 0.00-8.04 (ALA/SF Co Line - ALA/CC Co Line)
10-lane freeway F-15
HOV lane

Segment C: CC 0.00-Sol 0.93 (ALA/CC Co Line - Carquinez Br. Toll Plaza)
8-lane freeway F-15
HOV lane

CONCEPT RATIONALE

Route I-80 is a commercial, recreational and commuter route. It is a major east-west corridor between San Francisco and the East Bay. It is the main connecting route between the Bay Area, the Central Valley and points east. There is heavy commuter traffic during both morning and evening rush hours over most of the route.

Development in West Contra Costa County will increase congestion and a Level of Service of F is expected along the entire route unless intensive use is made of alternative transportation modes.

AREAS OF CONCERN

Major areas of concern are the sections between the eastern end of the San Francisco-Oakland Bay Bridge and Berkeley in Alameda County, and between MacDonald Avenue and Willow Avenue in Contra Costa County. These sections currently experience high levels of congestion during the AM and PM rush hours. The Route Concept for all the segments for Route 80 will not meet the demand that will be placed on the facility by the year 2005. The projected traffic on all these segments would justify a 14-18 lane freeway throughout, which is not presently feasible. An increasing number of trips will have to be diverted to other modes of transportation such as transit, and to alternative routes. TSM measures should also be implemented to attempt to alleviate some of the congestion problems. However, it is anticipated that demand will continue to exceed capacity, and that the peak period will continue to expand, to possibly as much as (or even more than) 4 hours in both the AM and PM.

IMPROVEMENTS
(Post 1984 STIP)

There are projects in the 1984 STIP which will add capacity in Alameda and Contra Costa Counties by providing some additional lanes, auxiliary lanes, and 2 HOV lanes. This will not totally alleviate the projected congestion, but no further improvements are considered feasible at this time.

ROUTE DESCRIPTION

Route 80 within California extends from Route 101 in San Francisco to the Nevada State line near Verdi, Nevada. It continues across the country to the east coast, and is a major route for interstate travel.

The legislative description of Route 80 is as follows:

Route 80 is from:

(a) Route 101 near Division Street to Route 280 near First Street in San Francisco.

(b) Route 280 near First Street in San Francisco to the Nevada State line near Verdi, Nevada, passing near Oakland, via Albany, via Sacramento, passing near Roseville, via Auburn, via Emigrant Gap, via Truckee and via the Truckee River Canyon.

Route 80 in California is approximately 202 miles in length, traversing 10 counties: San Francisco, Alameda, Contra Costa, Napa (District 4); Solano (District 10); Yolo, Sacramento, Placer, Nevada and Sierra (District 3).

Within District 4, the freeway crosses 4 counties for a total length of 29.2 miles.

I-80 begins at the Route 101/80 interchange in San Francisco and runs northeasterly over the San Francisco-Oakland Bay Bridge and continues northerly through the Cities of Oakland, Emeryville, Berkeley and Albany in Alameda County. I-80 continues northeast through the Cities of Richmond, El Cerrito, San Pablo, Pinole, Hercules and the town of Crockett in Contra Costa County ending on the northern side of the Carquinez Bridge in Solano County (PM 0.93) which marks the boundary of District 4. After crossing part of Solano County (District 10), a 1.19 mile stretch of Route 80 penetrates Napa County (Sol PM 6.81 to 8.00). At that point, the route crosses back into Solano County.

Route 80 is part of the Subsystem of Highways for the Movement of Extra Length Permit Loads (SHELL) Route, and a part of the Designated System of Routes for Larger Trucks. Most of the route in District 4 is part of the Interstate Highway (FAI) system, except the first 1.5 miles in San Francisco (PM 3.95 to 5.45), which is part of the Federal-Aid Primary (FAP) system.

I-80 is part of the State Scenic Highway system between San Francisco PM 5.05 and Ala PM 2.52 (6.32 miles) which encompasses the entire San Francisco-Oakland Bay Bridge.

II PURPOSE OF ROUTE

The entire route functions as a principal arterial and as an interregional connector. It is a major commuter route into San Francisco from Alameda, Solano and Contra Costa Counties and a significant commuter route to the north and central East Bay area from Solano County. I-80 also serves as a major commercial route between San Francisco, Alameda, Contra Costa counties and points northeast which include Sacramento and the Central Valley. I-80 is the only Trans-Sierra interstate truck route to the east in northern California. Vacationers and tourists use this route for recreational destinations north such as the Napa Valley wine country and Lake Berryessa, and points east such as Sacramento, Reno, winter skiing resorts and Lake Tahoe; they also use this route to enter the Bay Area from the northeast.

III REGIONAL CHARACTERISTICS

The Association of Bay Area Governments (ABAG) has projected significant employment growth in the I-80 corridor, which includes San Francisco and western Alameda and Contra Costa Counties. This growth will directly affect traffic concentration of Route 80 and the other commuting routes of the area connected with I-80 (Routes 880, 101, 280, 580, 480, 37, and 4). In the 20 year period between 1980 and 2000, the population of the communities along the I-80 corridor is projected to grow from 1,014,802 to 1,065,100, reflecting a 5% increase. However, total employment in this same area is projected to grow from 697,910 to 838,000, which is an increase of 20%. (Source: ABAG, Projections '83).

Employment opportunities in central Contra Costa County (Walnut Creek, Concord, and Pleasant Hill) are expected to increase by 68% by the year 2000. Commuters from Solano, Marin, Napa, San Francisco and San Mateo Counties as well as west Contra Costa County, could increase the work trips going into central Contra Costa County. Many of these commute trips will use some portion of I-80, and will increase demand on these parts of the corridor.

IV ROUTE SEGMENTS

I-80 is divided into 4 segments, each segment limit being a county line.

Segment A traverses San Francisco County,
Segment B traverses Alameda County,
Segment C traverses Contra Costa County, and
Segment D traverses a small section of Napa County.
Segment D will be included in the District 10 concept report.

A. Segment A (04-SF-I-80 PM 3.95-8.85)

This segment begins in San Francisco at the I-80/101 junction near Division Street. It continues onto the San Francisco-Oakland Bay Bridge and ends at the San Francisco/Alameda County line on the cantilevered section of the Bay Bridge, shortly beyond Yerba Buena Island.

1 Existing Facilities

a. Highway Facility

The total number of lanes varies from 4-8 lanes in downtown San Francisco to 10 lanes on the San Francisco-Oakland Bay Bridge (5 lanes eastbound on the lower deck and 5 lanes westbound on the upper deck). The San Francisco portion of the freeway is on a viaduct transitioning onto the Bay Bridge, and the left and right roadway are on separate structures. There are no shoulders. The grade ranges from 0-4%.

An eastbound high occupancy vehicle (HOV) lane/truck ramp to the Bay Bridge is available at Sterling Street, between 4 and 6 PM. Separate ramps are provided at the San Francisco end of the Bay Bridge for buses entering and leaving the Transbay Terminal.

b. 1984 STIP Projects

The following 1984 STIP Projects are relevant to the Systems Planning process:

FY 85-86

PM 5.7/8.8	Traffic management system-Phase II
PM 7.7/7.9	Modify EB ramps at Treasure Island

c. Public Transportation

The Bay Area's most frequently used transfer point, the Transbay Terminal, is situated four blocks away from Route I-80. There are special ramps leading to and from the Transbay Terminal and the Bay Bridge for buses only. Golden Gate Transit, serving Marin County, has 34 routes that terminate or stop at the terminal. San Mateo County Transit (SamTrans), serving San Mateo County, has 10 routes ending at the terminal. Alameda/Contra Costa (AC) Transit has 14 routes ending at the same terminal. In addition, San Francisco Municipal Railway (MUNI) has 15 routes serving the terminal. MUNI has 59 routes serving this downtown area. Two blocks away, the Bay Area Rapid Transit System (BART), connecting the East Bay and San Francisco, stops at the Embarcadero Station. Six blocks away from the Transbay Terminal, Marin County Ferries terminate at the Ferry Building.

I-80 is used by AC Transit to transport commuters extensively as the Bay Bridge is the only freeway connecting Oakland and San Francisco. In addition, other transportation agencies, such as Greyhound, Trailways, Samtrans, Amtrak Bus Shuttle and Airporters to and from Napa, Solano, Contra Costa, San Mateo and Alameda Counties, use the freeway.

d. Bicycles

Caltrans operates a shuttle van for bicycles on the Bay Bridge between Oakland and San Francisco for $ .50 a ride on weekdays only. Bicyclists can also use BART to transport their bicycles during off-peak hours. Collapsible bicycles are accepted during peak-hours if they fit under a BART seat. No bicycles are allowed on I-80.

e. Park and Ride

There are no State-owned or joint use park-and-ride lots on the I-80 corridor in San Francisco. There are 19 parking lots owned by Caltrans in the downtown area. 340 of these spaces are reserved for vanpools to park free of charge.

f. Rail

The Bay Area Rapid Transit system (BART) is a heavy rail rapid transit system connecting the East Bay with the West Bay Area along the I-80 corridor. Amtrak stops at Oakland, with feeder bus service to the Transbay Terminal in San Francisco via the Bay Bridge.

In San Francisco, the CALTRAIN Peninsula Commuter Train originates at 4th and Townsend and travels south to San Jose, serving San Francisco, San Mateo, and Santa Clara Counties. A downtown extension has been proposed from 4th and Townsend to the Transbay Terminal. The study is in the public review stage.

No rail service shares right-of-way with Route 80, and all crossings are separated.

2. Current Operating Conditions

The AADT for 1982 ranges from a low of 185,000 at the 4th and 5th Street I/C to a high of 201,000 at the San Francisco/Alameda County line. The eastbound one-way AM peak hour traffic ranges from a high of 9,200 at the 7th and 8th Street I/C to a low of 7,200 at the 4th and 5th Street I/C. The westbound one-way AM peak ranges from a low of 7,600 at 7th and 8th Street I/C to a high of 9,000 at the SF/Alameda County line.

The V/C ratio ranges from 0.98 (LOS E-30) at the 4th and 5th Street I/C to 1.00 (LOS F-20) at the 7th and 8th Street Interchange.

3. Accident Rate (1/81-12/83)

During this period, there were 2,548 accidents with 1,281 injuries and 7 fatalities on this segment of I-80. Of all the accidents, 51.5% occurred in the eastbound direction, and 34.1% occurred during the hours of 2-6 PM.

The fatality rate is 0.005/MVM and the total accident rate is 2.39/MVM. The fatality rate is below the statewide average of 0.008/MVM, while the accident rate is more than 2 1/2 times the statewide average of 0.94/MVM.

4. Future Operating Conditions

The projected demand for 1995 AADT ranges from a low of 206,000 at the 7th and 8th Street Interchange to a high of 227,000 at the San Francisco/Alameda County line. The projected westbound one way AM peak hour traffic ranges from a low of 8,300 to a high of 11,200 at those same locations. The eastbound AM peak hour traffic ranges from a high of 10,200 at the 7th and 8th Street Interchange, to a low of 8,700 at the 4th and 5th Street I/C. The D/C (Demand/Capacity) ratio is projected to be 1.41 and the LOS F-15.

The AADT projected demand for 2005 ranges from a low of 224,000 at the 7th and 8th Street Interchange to a high of 246,000 at the San Francisco/Alameda County line. The projected one way AM peak hour traffic westbound ranges from a low of 9,100 to a high of 12,200 at those same locations. The AM eastbound peak hour traffic ranges from a high of 11,100 at the 7th and 8th Street I/C, to a low of 9,400 at the 4th and 5th Street I/C. The D/C ratio is projected to be 1.41 and the LOS F-15.

There are no capacity improvements planned for this segment; thus, the Level of Service is anticipated to be F-15. As congestion continues to increase, trips will need to be diverted to other routes or to alternative transportation modes. In addition, TSM projects should be implemented to help alleviate congestion. It is probable that the peak periods of traffic congestion will expand, possibly to 4 hours or more in both the AM and PM periods. The Bay Bridge will continue to operate at capacity with severe delays, especially in the PM peak period eastbound where there is no metering of vehicles approaching the bridge.

5. Route Concept

The projected demand for the year 2005 would justify a 14 lane facility throughout this segment. However, widening of the Bay Bridge to 7 lanes each direction may not be feasible at this time. The existing viaduct leading to the bridge is a 6-8 lane facility generally with three lanes in each direction, and additional lanes at interchanges. There are some auxiliary lanes at on- and off-ramps, but they do not provide through traffic flow. There is a proposal to improve the approaches to the Bay Bridge in San Francisco through the addition of auxiliary lanes. There have been proposals to widen I-80 in San Francisco to 8 lanes. The route concept is for an 8-lane facility in San Francisco with auxiliary lanes where possible, and to maintain the current 10 lanes on the San Francisco/Oakland Bay Bridge at this time. The concept LOS is F-15.

To alleviate congestion that exists now and is projected for the years 1995 and 2005, alternatives to increasing capacity on Route 80 will have to be found. Increases in BART and other transit services are possible, but these may not be able to fill the entire demand. Water-borne transportation is currently being studied; hovercrafts are being evaluated for feasibility between Alameda and San Francisco. Expanded use of TSM projects are also needed to help alleviate traffic demands.

6. Improvements (Post 1984 STIP)

Widen Route 80 in the city of San Francisco to 8 lanes with auxiliary lanes where possible.

B. Segment B (04-Ala-80, PM 0.00-8.04)

This segment begins on the Bay Bridge at the San Francisco/Alameda County line just east of Yerba Buena Island, and continues through Oakland, Berkeley and Albany to the Alameda/Contra Costa County line.

1. Existing Facilities

a. Highway Facilities

This segment begins with 5 lanes on each deck of the Bay Bridge with 18 lanes westbound at the Toll Plaza and 6 lanes eastbound. The freeway continues through the junction with Route 880 and I-580 with 2-3 lanes in each direction. It increases to 5 lanes each direction in Emeryville and decreases to 4 lanes eastbound at Ashby Avenue, and to 4 lanes westbound at Powell Street, continuing to the junction with I-580 west, where it decreases to 3 lanes in each direction.

Medians vary from 10 feet over most of the route to 100 feet at the junction with Routes 880/580 where the freeway is mostly on structures. Shoulders range from none to 16 feet along this segment.

Terrain is flat with grades not exceeding 4%.

Three high occupancy vehicle (HOV) lanes exist currently in the westbound approaches to the Toll Plaza; two are on the north side of the westbound lanes, and one is on the south side. Vehicles westbound with 3 or more occupants are not charged a toll during peak hours both AM and PM.

b. 1984 STIP Projects

The following STIP projects are relevant to the Systems Planning process:

FY 85-86 PM 5.8/6.6	Reconstruct frontage road (west side) University Avenue to Gilman Street
FY 86-87 PM 2.8/5.6	HOV and additional lanes, I/C improvement Jct. Rte 580 to near University Avenue
FY 87-88 PM 1.5/4.6	High occupancy vehicle lane eastbound Near Toll Plaza to Ashby Avenue
FY 88-89 PM 4.6/6.7	HOV and additional lanes and I/C improvements Ashby Avenue to Gilman Street

c. Public Transportation

I-80 is used by AC Transit to transport passengers during peak and off-peak hours. Greyhound, Trailways, Amtrak bus shuttle service, airporters and other agencies use the I-80 corridor. In this segment, I-80 is not only a connector between the West and East Bay areas but a major transportation facility between the northern and southern East Bay areas.

The Bay Area Rapid Transit (BART) system roughly parallels I-80 from San Francisco to Oakland. The Richmond-bound train parallels I-80 through Emeryville, Berkeley and Albany.

d. Bicycles

Bicycles are not allowed on I-80. Caltrans runs a shuttle for bicycles across the Bay Bridge on weekdays for $ .50 a ride, and bicyclists may carry their bicycles on BART during off-peak hours. There is a frontage road and alternative streets between the 580/880 Interchange and the County Line.

The City of Oakland has requested reconsideration of the construction of a bicycle/pedestrian path that was planned at one time to run along the shorline from Powell Street to the Bay Bridge.

e. Park and Ride

1) State-owned lots:
I-80/Bay Bridge Toll Plaza
PM Ala 2.0 in Oakland
50 spaces

Ashby Avenue I/C
PM ALA 2.8 in Berkeley
2 lots - to be built. No. of spaces N/A

2) Joint Use Lots:
There are no joint use lots on the I-80 corridor in this segment.

f. Rail

BART has trains from San Francisco to Richmond with stops in Oakland, Berkeley, El Cerrito and Richmond. The track roughly parallels I-80. BART also runs trains through Oakland to Fremont and Concord.

Amtrak also roughly parallels I-80 from Crockett at the south end of the Carquinez Bridge via Richmond to Oakland. In Oakland, Amtrak passengers bound for San Francisco are transported by bus via I-80 and the Bay Bridge to the Amtrak station in the Transbay Terminal.

2. Current Operating Conditions

The AADT for 1982 ranges from a high of 226,000 at the Powell Street I/C, to a low of 178,000 at the Gilman Street I/C. The westbound AM peak hour traffic ranges from a high of 9,000 at the SF/ALA County Line, to a low of 4,500 at the junction of I-580. The eastbound AM peak hour traffic ranges from a high of 8,100 at the SF/ALA County Line, to a low of 3,800 at the junction of I-580. The westbound AM peak hour traffic between Powell Street and Gilman Street ranges from a high of 7,200 (V/C 1.00; LOS F-20) to a low of 7,100 (V/C 0.89; LOS D-30). Eastbound AM peak hour traffic ranges from a high of 5,900 to a low of 5,800 at those same locations.

The V/C ratio ranges from 1.0 at the SF/ALA Co. Line with an LOS of F-20, to 0.45 at the junction of Route 580 with an LOS of B-50.

3. Accident Rate

During the period from 1/81 to 12/83, there were a total of 2,796 accidents with 1,586 injuries and 8 fatalities. Of all the accidents, 56.2% occurred in the westbound direction; they were spread fairly evenly throughout the daytime hours and the days of the week, with no period being significantly high.

The fatality rate is 0.004/MVM and the total accident rate is 1.62/MVM, compared to the statewide average of 0.011/MVM and 1.24/MVM respectively. The accident rate is above the statewide average, but the fatality rate is only 1/3 the statewide average.

4. Future Operating Conditions

The 1995 projected AADT ranges from a high of 252,000 at the Powell Street I/C, to a low of 200,000 at the Gilman Street I/C. The westbound AM peak ranges from a high of 14,000 at the Powell Street I/C, to a low of 10,900 at the Gilman Street I/C. The eastbound AM peak ranges from a high of 9,400 at Powell Street, to a low of 7,200 at Gilman Street. The D/C ratio is 1.18 with an LOS of F-20 throughout this segment.

The 2005 projected AADT ranges from a high of 273,000 at the Powell Street I/C, to a low of 217,000 at the Gilman Street I/C. AM peak hour traffic one way westbound ranges from a low of 12,000 at the junction of Route 580 to a high of 15,600 at the Powell Street I/C. Projected eastbound AM peak ranges from a high of 10,400 at Powell Street, to a low of 8,500 at Gilman Street. The D/C ratio for 2005 is 1.33 with an LOS of F-15.

5. Route Concept

Peak period traffic projections for the year 2005 would justify a 14-18 lane freeway in this area. However, it is not feasible to increase capacity along the I-80 corridor to this extent. Because of the physical restrictions of this corridor, the only way to add capacity would be to add a second deck to the freeway from the Distribution Structure to the John T. Knox Freeway. This is not likely to be an alternative acceptable to local communities.

Caltrans is planning to build a separate HOV lane on the east side of I-80 from the east end of the San Francisco/Oakland Bay Bridge to Ashby Avenue. It will serve buses, vanpools, and carpools of 3 or more people during the PM peak hour eastbound. Buses only will use this HOV lane during AM peak hour westbound. An additional lane will be constructed in both directions from Ashby Avenue to Gilman Street (EB) and from the Distribution Structure to Buchanan Street (WB). Major interchange-improvements will be undertaken at Powell Street, Ashby Avenue, University Avenue, Gilman Street, and Buchanan Street. Auxiliary lanes will be added between the Distribution Structure and Central Avenue, and a collector road from Gilman Street to north of Buchanan Street.

These improvements are expected to increase the capability of the corridor to carry peak hour traffic, but there will need to be trips diverted to other routes, to transit, and carpools. The D/C ratio is not expected to decrease significantly; i.e., demand will exceed capacity, and LOS will still be F-15. TSM projects will also be needed to help alleviate demand.

The route concept for this segment is to widen Route 80 to 10 lanes between the Bay Bridge and Gilman and Buchanan Streets, and to add an HOV lane between the Bay Bridge and Ashby Avenue.

6. Improvements (Post 1984 STIP)

The 1984 STIP includes projects to construct an additional lane in both directions from Ashby Avenue to Gilman Street (EB), and from the Distribution Structure to Buchanan Street (WB). Construct an HOV lane between the SFOBB and Ashby Avenue. Improve interchanges at Powell Street, Ashby Avenue, University Avenue, Gilman Street, and Buchanan Street.

Additional improvements beyond those in the STIP are not contemplated at this time. Improvements will be needed in alternative transportation modes and TSM measures to alleviate some of the anticipated congestion.

7. Concept Concerns

The basic concern in this segment is the alleviation of congestion through the Toll Plaza and the Distribution Structure. The City of Oakland supports the construction of the planned HOV lane from the Toll Plaza to Ashby Avenue, but is concerned that an elevated structure will have adverse visual impacts.

C **Segment C** (04-CC-80 PM 0.00 - Sol 0.93)

This segment of I-80 begins at the Alameda/Contra Costa County line and traverses the western part of Contra Costa County through Richmond, El Cerrito, San Pablo, Pinole, and Hercules, over the Carquinez Bridge and ends 0.93 miles into Solano County, which is the end of the Carquinez Bridge and the District 4 boundary.

West Contra Costa County is expected to increase in population by 20% by the year 1995. The communities expected to increase the most are the suburban communities which rely on other areas for employment. This will increase trips along the I-80 corridor.

1. Existing Facilities

a. Highway Facility

A six lane freeway exists throughout this segment including the Carquinez Bridge. The median width varies from 8 to 12 feet except over the bridge, which consists of two structures. The shoulders are 8 feet over most of this segment, and range from zero to 10 feet. The terrain varies from flat to rolling; grades range from 0 to less than 6%.

b. 1984 STIP Projects

The following STIP projects are relevant to the Systems Planning Process:

FY 86-87

PM 0.3/4.5	HOV/Additional lane, I/C improvement
PM 5.2/8.6	Widen freeway, auxiliary lanes

FY 87-88

PM 4.5/6.2	HOV/Additional lane, I/C improvement
PM 6.2/8.4	HOV/Additional lane, new interchange
PM 8.4/10.9	HOV, interchange improvement

c. Public Transportation

Public transportation is available along the I-80 corridor. The Western Contra Costa Transit Authority (WESTCAT) has the 70A lines paralleling I-80 with the AC Transit Express bus Route 30Z utilizing I-80 as part of its route. The BART express feeder bus lines (J and Q) also utilize the freeway, transporting passengers from the El Cerrito del Norte BART station to several western Contra Costa County communities. BART parallels I-80 from Oakland to the Richmond station, serving commuters between Richmond, Oakland and San Francisco. BART has completed a study on the possible expansion of service east of Richmond. The construction of two stations up to Hilltop Center in Richmond, are tentatively proposed for phase two of their expansion program. Route 80 is a major link for regional and interstate bus routes operated by Greyhound Lines and Trailways.

d. Bicycles

No bicycles are allowed on I-80 as alternative routes are available. Caltrans offers a shuttle service over the Carquinez Bridge; bicyclists must call a day ahead to make arrangements.

e. Park and Ride

State owned:
Route 80 at San Pablo Avenue in Crockett
PM 13.5; Total spaces - 111

Route 80 at Willow Avenue and San Pablo Ave in Hercules
PM: 10.7; Total spaces - 36

Route 80 at Hilltop Road in Richmond
PM: 6.0; Total spaces - 141

Joint use:
Pinole Valley Lanes at 1580 Pinole Valley Blvd.
Total Spaces - 10

K-Mart at 500 Fitzgerald Drive in Pinole
Total Spaces - 40

Breuner's Furniture Store at 3524 Pierce St. in Richmond
Total spaces - 125

f. Rail

In this segment, the Amtrak east/westbound line runs roughly parallel to I-80 from Richmond to Crockett.

2. Current Operating Conditions

The AADT for 1982 ranges from a high of 129,000 at the Solano Avenue Connector, to a low of 71,000 at the Carquinez Bridge. The westbound AM peak varies from a high of 5,200 at the MacDonald Avenue Connector, to a low of 2,600 at the Carquinez Bridge. The eastbound AM peak hour traffic ranges from a high of 2,900 at MacDonald Avenue Connector, to a low of 1,500 at Cummings Skyway. The V/C ratio varies from 0.87 (LOS E-35) at the MacDonald Avenue Connector, to 0.43 (LOS B-50) at the Carquinez Bridge.

3. Accident Rate

During the three year period (1/81 to 12/83), there were 1,533 total accidents with 21 fatalities and 1,092 injuries in this segment of I-80. 52.2% of all the accidents occurred in the eastbound direction, 20% occurred on Friday, and 26% of the accidents occurred between the hours of 3:00 PM and 7:00 PM.

The fatality rate is 0.013 per MVM, which is slightly above the statewide average of 0.011/MVM. The accident rate is 1.00/MVM, which is slightly below the statewide average of 1.11/MVM for this type of facility.

4. Future Operating Conditions

The 1995 projected AADT ranges from a high of 156,000 at the Solano Avenue Connector, to a low of 82,000 at Cummings Skyway I/C. The projected westbound AM peak hour traffic varies from a high of 11,500 at the Solano Avenue Connector, to a low of 6,700 at the Willow Avenue I/C. The projected eastbound AM peak ranges from a high of 6,200 at Solano Avenue Connector, to a low of 3,600 at Willow Avenue I/C. The D/C ratio is 1.31 with an LOS of F-20.

The 2005 AADT ranges from a high of 168,000 at the Solano Avenue Connector, to a low of 95,000 at Cummings Skyway I/C. The westbound AM peak varies from a high of 12,300 at the Solano Ave. Conn, to a low of 7,700 at the Willow Avenue I/C. The eastbound AM peak ranges from a high of 6,600 at the Solano Avenue Connector, to a low of 3,900 at Cummings Skyway. The D/C ratio is 1.48 with an LOS of F-15.

5. Route Concept

Traffic projections indicate a need for a 12 to 14 lane facility in this segment. However, it is not feasible to add this amount of capacity to I-80. The State is planning to build a separated HOV lane from south of San Pablo Dam Road to Willow Avenue in the westbound direction, an additional lane on eastbound I-80 from San Pablo Avenue to Pinole Valley Road, and 1 lane westbound from McBryde Avenue to San Pablo Avenue. In addition, the state is planning to add auxiliary lane segments between Central Avenue and Willow Avenue at 5 locations eastbound and 6 locations westbound, and a collector road westbound from Willow Avenue to Route 4. These improvements will decrease the commute time for HOV's, but are not expected to improve the overall congestion problems that occur at peak periods.* Demand will exceed capacity and trips will need to be diverted from Route 80 to alternative routes and modes of transportation. The projected and concept LOS is F-15. The possible extension of BART east of Richmond may take up some of the trips that are expected to be diverted from I-80 during AM and PM rush hours. The route concept for this segment is to increase capacity to 8 lanes, including over the bridge into Solano County, and to add an HOV lane from San Pablo Dam Road to Willow Avenue. TSM projects will also be needed to help alleviate demand.

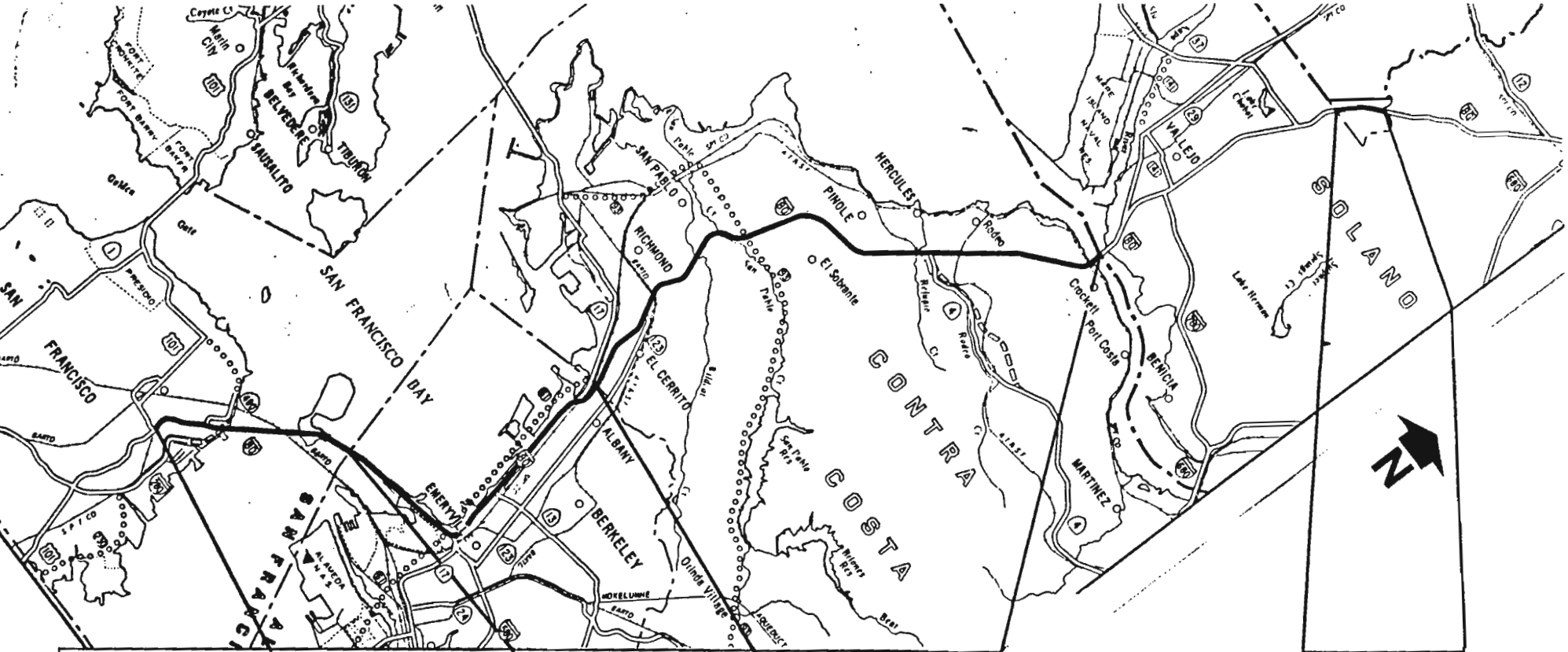
*See "Route 80 Operational Evaluation" by Caltrans District 4, 1982.

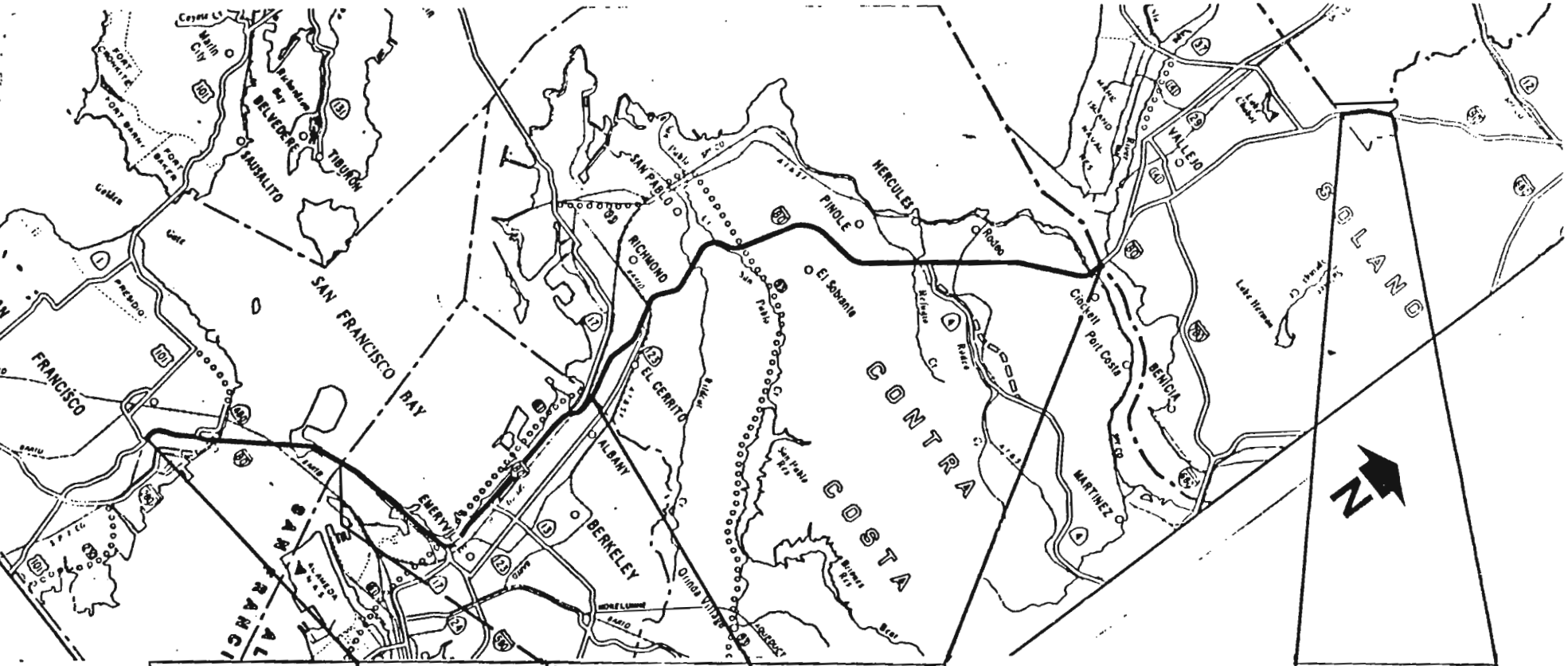
6. Improvements (Post 1984 STIP)

The 1984 STIP includes projects to add an HOV lane from south of San Pablo Dam Road to Willow Avenue. Add an additional lane eastbound from San Pablo Avenue to Pinole Valley Road, and one lane westbound from McBryde Avenue to San Pablo Avenue. Also add auxiliary lane segments at 11 locations between Central Avenue and Willow Avenue and a collector road from Willow Avenue to Route 4.

Future projects would be to widen Route 80 to 8 lanes into Solano County; this would involve building a new southbound Carquinez Bridge. Improvements will be needed in alternative transportation modes, and pursuit of TSM measures will be needed to help alleviate congestion.

EXHIBIT A


SAN FRANCISCO BAY
SAN FRANCISCO
SAN PABLO
RICHMOND
EL CERRITO
ALBANY
BERKELEY
EMERYVILLE
OAKLAND
ALAMEDA
BELVEDERE
TIBURON
SAUSALITO
Marin City
HERCULES
PINOLE
Rodeo
El Sobrante
CONTRA COSTA
Crockett
Port Costa
MARTINEZ
BENICIA
VALLEJO
SOLANO
Lake Herman
Orinda Village
Moraga
Golden Gate
Presidio
Fort Mason
Fort Baker
Fort Barry
Fort Cronkhite
Coyote Cr
Richardson Bay
Lake Chabot
Rheem Res
Briones Res
San Pablo Res
Alameda Naz
Hoekelunne
Bart
Amtrak
Tube
Aqueduct
Pole Sp Cr
Rodeo Cr
Pinole Cr
Wildcat Cr
Bear Cr
Mare Island Naval Res
Sp Co
Sp Co
Sp Co



SEGMENT		SF 3.95 A SF 8.85	ALA 0.00 B ALA 8.04	CC 0.00 C CC14.14
A.A.D.T. (.000)	1982	193	199	98
	1995	215	222	124
	2005	232	240	138
P.H.V. (00)	1982	88	69	41
	1995	100	117	84
	2005	108	132	106
AVE. HWY SPEED		70	70	70
OPERATING SPEED		35	35	44
V/C	1982	1.00	.88	.43-.87
	1995	1.29	1.18	1.31
	2005	1.41	1.33	1.48
YEAR CAPACITY WILL BE REACHED		< 1982	1989	1988

NAP 8.004

NAP 6.814

DONE BY DISTRICT 10

EXHIBIT B

EXISTING HIGHWAY FACILITIES

SEGMENT	COUNTY	FROM PM	TO PM	SEGMENT LENGTH (MILES)	TRAVELED WAY WIDTH (FEET)	NUMBER OF LANES	SHOULDER WIDTH	MEDIAN WIDTH
A	SF	3.95	8.95	5	38-59	6-10	0	V
B	ALA	0.00	8.04	8.04	24-88	6-14(18)	0-12	10-99V
C	CC	0.00	14.14 (SOL 0.93)	15.07	36-48	6-8	8-10	8-12

ROUTE 80 TRAFFIC TABLE

S E G	CO	POST MILE	TRUCK% AA DT	TRUCK% PK HR	1982 AA DT	1982 AM-PK AH	1982 AM-PK BK	1982 NO LN	1982 V/C	1982 O S	1982 L NO LN	CAP	1995 AA DT	1995 AM-PK AH	1995 AM-PK BK	1995 NO LN	1995 D/C	1995 O S	1995 L NO LN	2005 AA DT	2005 AM-PK AH	2005 AM-PK BK	2005 NO LN	2005 D/C	2005 O S	2005 L NO LN
A	SF	3.95						JCT RTE 101																		
			5	3	193	92	76	3	1.53	F	6	3067	206	102	83	3	1.69	F	6	224	111	91	3	1.85	F	7
A	SF	4.40						7TH AND 8TH STREET I/C																		
			5	3	185	72	89	5	0.89	D	5	2000	215	87	106	5	1.06	F	6	233	94	115	5	1.15	F	7
A	SF	5.45						4TH AND 5TH STREET I/C																		
			5	3	201	81	90	5	0.90	D	5	2000	227	92	112	5	1.12	F	7	246	99	122	5	1.22	F	7
A	SF	8.85						SAN FRANCISCO/ALAMEDA CO LINE																		
			5	3	201	81	90	5	0.90	D	5	2000	227	92	112	5	1.12	F	7	246	99	122	5	1.22	F	7
B	ALA	1.99						SFOBB (TOLL PLAZA)																		
			5	3	201	81	90	5	0.90	D	5	2000	227	92	112	5	1.12	F	7	246	99	122	5	1.22	F	7
B	ALA	2.41						ARMY TERMINAL CONN																		
			5	3	199	38	45	5	0.45	B	5	2000	224	91	111	5	1.11	F	7	243	98	120	5	1.20	F	7
B	ALA	2.8						JCT RTE 580																		
			7	4	226	59	72	3	1.20	F	4	2400	252	94	141	5	1.41	F	8	273	104	156	5	1.56	F	9
B	ALA	3.79						POWELL ST I/C																		
			9	5	209	57	69	4	0.86	D	4	2000	235	84	127	5	1.27	F	8	255	99	148	5	1.48	F	9
B	ALA	4.58						ASHBY AVE/RTE 13 EAST																		
			10	6	194	52	63	4	0.79	C	4	2000	218	79	118	5	1.18	F	7	237	92	138	5	1.38	F	8
B	ALA	5.82						UNIVERSITY AVE I/C																		
			10	6	178	58	71	4	0.89	D	4	2000	200	72	109	5	1.09	F	7	217	85	127	5	1.27	F	8
B	ALA	6.62						GILMAN STREET I/C																		
			10	6	180	50	74	4	0.92	E	5	2000	203	73	110	5	1.10	F	7	220	86	129	5	1.29	F	8
B	ALA	7.33						JCT RTE 17 AND CC COUNTY LINE																		
			9	6	119	28	50	3	0.83	D	3	2000	143	53	98	4	1.23	F	6	154	61	113	4	1.41	F	7
C	CC	0.22						CENTRAL AVE I/C																		
			9	6	115	27	50	3	0.83	D	3	2000	139	55	103	4	1.29	F	6	150	59	110	4	1.38	F	7
C	CC	1.00						CARLSON BLVD I/C																		
			8	6	117	24	49	3	0.82	D	3	2000	142	56	105	3	1.74	F	6	153	60	112	3	1.87	F	7
C	CC	1.67						POTRERO AVE I/C																		
			8	6	106	24	44	3	0.73	C	3	2000	127	50	94	3	1.56	F	6	137	54	100	3	1.67	F	6
C	CC	2.04						CUTTING BLVD/RTE 123 S																		
			7	5	125	29	52	3	0.87	D	3	2000	151	60	111	3	1.85	F	7	162	64	119	3	1.98	F	7
C	CC	2.62						MACDONALD AVE CONN																		
			6	4	122	27	47	3	0.78	C	3	2000	147	58	108	3	1.80	F	7	158	62	116	3	1.93	F	7

ROUTE 80 TRAFFIC TABLE

S E G	CO	POST MILE	TRUCK% AA DT	PK HR	1982 AA DT	AM-PK AH BK	NO LN	V/C	L O S	NO LN	CAP	1995 AA DT	AM-PK AH BK	NO LN	D/C	L O S	NO LN	2005 AA DT	AM-PK AH BK	NO LN	D/C	L O S	NO LN
C	CC	2.96					SAN PABLO AVE CONN																
			8	6	129	27	49	0.82	D	3	2000	156	62	115	1.43	F	7	168	66	123	1.54	F	7
C	CC	3.41					SOLANO AVE CONN																
			8	6	122	24	44	0.73	C	3	2000	147	58	108	1.35	F	7	158	62	116	1.45	F	7
C	CC	3.80					MCBRYDE AVE CONN																
			9	6	125	23	42	0.70	C	3	2000	151	60	111	1.39	F	7	162	64	119	1.49	F	7
C	CC	4.34					SAN PABLO DAM RD I/C																
			9	6	112	19	35	0.58	C	3	2000	135	56	105	1.31	F	6	156	64	120	1.49	F	7
C	CC	5.25					EL PORTAL DR I/C																
			9	6	104	25	47	0.78	C	3	2000	125	52	96	1.21	F	6	144	59	110	1.38	F	7
C	CC	5.98					HILLTOP DRIVE I/C																
			10	7	102	21	38	0.63	C	3	2000	122	51	95	1.18	F	6	141	58	108	1.35	F	7
C	CC	7.60					APPIAN WAY I/C																
			11	7	98	28	51	0.85	D	3	2000	117	49	90	1.13	F	6	135	55	103	1.29	F	6
C	CC	8.51					PINOLE VALLEY RD I/C																
			12	8	86	21	38	0.63	C	3	2000	103	43	79	0.99	E	5	119	49	90	1.13	F	6
C	CC	10.06					JCT RTE 4 EAST																
			11	7	71	16	29	0.48	B	3	2000	84	36	67	0.84	D	4	98	41	77	0.96	E	5
C	CC	10.69					WILLOW AVE I/C																
			8	6	71	15	27	0.45	B	3	2000	82	37	69	0.86	D	4	95	39	90	1.13	F	6
C	CC	12.75					CUMMINGS SKYWAY I/C																
			6	4	75	18	26	0.43	B	3	2000	87	39	73	1.21	F	5	101	41	95	1.59	F	6
C	CC	13.49					CROCKETT I/C																
			6	4	71	18	26	0.43	B	3	2000	88	40	74	1.23	F	5	101	41	96	1.60	F	6
C	CC	14.14					CARQUINEZ BRIDGE																

EXPLANATION TO TRAFFIC VOLUME TABLES

COLUMN	DESCRIPTION
SEGMENT	Description of the Route Segment
CO	County Abbreviations
MILE POST	Mile Post in County
AADT	Annual Average Daily Traffic Count
AM PK	Morning Peak Hour Traffic
AH	Volumes Ahead Direction
BK	Volumes Back Direction
NO L	Number of Lanes (Existing) One Direction
V/C	Volume/Capacity: Ratio Volume Traffic to Max. No. of Traffic/Hr.
LOS	Level of Service According to the Functional Classification of the Route Relative to the Terrain and Facility
LN	Number of Lanes Needed to Meet LOS "D" One Direction/Urban
	Number of Lanes Needed to Meet LOS "B" One Direction/Rural
% Truck AADT	Truck % of Average Annual Daily Traffic Count
% Truck PK HR	Truck % at Peak Hour

TRAVEL DEMAND PROJECTIONS METHODOLOGY (ABSTRACT)

1995 & 2005 Demand Person Trips Projections
34 x 34 ABAG/MTC Region Superdistricts Matrix
Computer-Assisted Four-Step Conventional Gravity
Model. (Housing & Employment based on ABAG's "Projections 83")

December 1983

INTRODUCTION: This medeling procedure developed traffic volume expansion factors and applied them to "census" volumes ("1980 Traffic Volumes on California State Highways") of State Highway segments at ABAG/MTC superdistrict (SD) borders (screenlines).

These projected 1995 and 2005 volumes were the basis for projecting volumes on all mainline segments for the 1983/84 "Route Concept Reports."

In essence, this methodology is consistent with the elments of the conventional "four-step" procedure for travel demand forecasting as summarized in the FHWA/UMTA outline for UTPS models and as described in the NCHRP guide for urban travel estimations ("Quick Response").

SUMMARY: Criteria and methods used in each one of the four "steps":

1. Trip Generation: Based on ABAG projections per 34 MTC "superdistrict." Productions per MTC-observed person trips produced and households; attractions per employment (and housing), adjusted to observed attractions.

2. Trip Distribution: Based on zonal trips produced and attracted, distribution factors based on travel times, and calibration factors derived from MTC-observed vs. simulated 1980 trip interchanges.

3. Assignment: Based on zonal trip interchanges, "fastest path" criteria and experience of travel patterns.

4. Modal Split: Implies; it was assumed that, on the segments evaluated, modal percentages and occupacy rates would remain essentially unchanged.

This chart indicates the relationship between Level of Service and minimum operating speed for a given facility type.

Assigned Level of Service	Facility Type	Minimum Operating Speed
B	Freeways, expressways, or multilane conventional highways	55 MPH
B	Two-lane conventional highways	50 MPH
C	Freeways or expressways	50 MPH
C	Multilane conventional highways	45 MPH
C-45	Two-lane conventional highways	45 MPH
C	Two-lane conventional highway	40 MPH
D	Freeway or expressways	40 MPH
D	Conventional Highways	35 MPH
D	Conventional Highways with controlling traffic signals	15-30 MPH*

* This condition is shown on the tabulation of route segments under the "LOS" headings as D35.

Operating level of service on a roadway is a measure of the speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, convenience, and operating cost. A roadway designed for a certain level of service will actually operate at different levels throughout the day. The level of service on a raodway varies inversely as some function of the traffic volume.

ASSUMPTIONS: The following parameters would remain essentially unchanged between 1980 and 2005:

1. Trip production rates, as functions of the number of households and their superdistrict of location.

2. Trip attraction rates and adjustment factors, as functions of jobs, housing units and superdistrict of location.

3. Speeds: Change in corridor speeds may be proportional to regionwide speed changes, or may differ without significantly affecting distribution or assignment.

4. Time vs. Distribution Factor Functions, and Calibration Factors. Increased socio-economic densities vs. higher fleet efficiencies and/or real earnings would have compensatory effects on trip lengths.

EXHIBIT D

ROUTE 80 ACCIDENT REPORT BETWEEN 1/81 and 12/83

Location PM	Segment	No. of Accidents T	FAT	INJ	F&I	Persons Killed	Persons Injured	Accident Rate* Fatal	F&I	Total	Statewide Rate*° Fatal	F&I	Total
SF 3.95 to 8.85	A	2548	6	797	803	7	1281	.005	.75	2.39	.008	.35	.94
Ala 0.00 to 8.04	B	2796	8	963	971	8	156	.004	.65	1.62	.011	.47	1.24
CC 0.00 to 14.14	C	1533	8	685	705	21	1092	.013	.46	1.00	.011	.42	1.11

* Rates Are Per Million Vehicle Miles (MVM)

° Statewide Average for The Type of Facility in Comparable Range

EXHIBIT E

EXISTING FACILITIES - BRIDGES

I-80

Route Segment	Bridge Number	Name or Description	Post Mile	City	Length (Ft)	Width (Ft)	Sidewalks or Curbs	
							LT	RT
A	34 88	SF Bayshore VI	0.00	SF	7502	76	1.5	1.5
	34 118R	SFOBB-Low Deck	4.99	SF	2167	35	1.5	1.5
	34 54	Terminal Sep	5.45	SF	20263	28	1.5	1.5
	34 116F	SFOBB-Up-N Con	5.46	SF	1843	20	1.5	1.5
	34 119Y	Transbay T RP	5.46	SF	3439	25	1.8	1.8
	34 120Y	Harrison St UC	5.46	SF	165	49	2.0	---
	34 117S	SFOBB-Up-SOff	5.48	SF	1035	20	3.0	3.0
	34 118L	SFOBB-Apro-U Dk	5.68	SF	3711	26	1.0	1.0
	34 03	West Bay Bridge	6.35	SF	20608	58	1.2	1.2
	34 04	Verba Buena Tu	7.85	SF	1791	58	2.0	3.5
B	33 25	East Bay Bridge	1.15	Oak	22654	58	1.5	1.5
	33 530	Traffic Mtr. Br	1.80	Oak	220	--	---	---1
	33 126L	Port of Oak OC	2.41	Oak	5409	28	2.0	2.0
	33 126R	Port of Oak OC	2.41	Oak	5445	28	2.0	2.0
	33 61R	Distrib Struct	2.80	Oak	1447	32	---	---

Route Segment	Bridge Number	Name or Description	Post Mile	City	Length (Ft)	Width (Ft)	Sidewalks or Curbs	
							LT	RT
B (Cont.)	33 61L	Distrib Struct	3.21	Oak	1558	40	---	---
	33 278	Temsecal Creek	3.51	Emv	47	--	---	---
	33 20	Powell St UC	3.79	Emv	310	122	---	---
	33 28	Fibreboard UC	3.96	Emv	22	207	---	---
	33 190F	Conn Sep	4.45	Emv	137	28	2.1	2.1
	33 191G	Rt 13 80 Sep	4.58	Ber	460	28	2.0	2.0
	33 23	University Avenue OC	5.82	Ber	1373	50	---	1.3
	33 127	Gilman Avenue UC	6.62	Ber	310	116	2.0	2.0
	33 51R	El Cerrito Overhead	7.20	Alb	1510	45	4.3	4.3
	33 51L	El Cerrito Soh	7.33	Alb	2112	44	1.5	1.5
C	28 136	Cerrito Creek	0.01	Rch	31	--	---	---
	28 114	Central Avenue UC	0.22	Rch	200	88	1.9	1.9
	28 156	Sacramento Avenue POC	0.50	Rch	184	--	---	---
	28 123	Carlson Blv UC	1.00	Rch	131	88	1.9	1.9
	28 157	Jefferson Avenue PC	1.50	Rch	9	--	---	---
	28 34	Potrero Avenue UC	1.67	ECR	245	88	1.9	1.9
	28 80	Cutting Blv S	2.04	Rch	192	112	1.9	1.9
	28 158	Wall Avenue PUC	2.20	Rch	139	0.8	0.8	0.8

Route Segment	Bridge Number	Name or Description	Post Mile	City	Length (Ft)	Width (Ft)	Sidewalks or Curbs	
							LT	RT
C (Cont.)	28 226	Ohio Street OH	2.50	Rch	43	--	---	---
	28 81	47th Street OH	2.54	Rch	27	132	---	0.8
	28 825	MacDonald Avenue UC	2.59	Rch	277	24	---	---
	28 82	MacDonald Avenue U	2.62	Rch	126	112	1.9	1.9
	28 83	Barrett Avenue OC	2.82	Rch	166	114	1.9	1.9
	28 84	San Pablo Avenue UC	2.96	Rch	147	88	1.9	1.9
	28 84K	San Pablo Avenue UC	2.96	Rch	153	22	0.3	2.0
	28 85	Solano Avenue OC	3.41	Rch	120	28	5.0	5.0
	28 87	McBryde Avenue OC	3.80	Rch	114	44	2.0	6.0
	28 175	Wildcat Creek	3.99	SPB	22	---	---	---
	28 159	Riverside Avenue PU	4.20	SPB	9	108	---	---
	28 89	San Pablo Dam O	4.34	SPB	129	52	5.0	5.0
	28 107	San Pablo Creek	4.81	---	46	---	---	---
	28 282M	San Pablo Creek	4.98	---	41	---	---	---
	28 122	El Portal Drive UC	5.25	---	158	88	1.9	1.9
	28 113	Hilltop Drive OC	5.98	Rch	182	28	5.0	1.9
	28 281	Hilltop Drive OC	6.00	Rch	286	36	5.0	---
	28 146	Appian Way OC	7.60	Pin	279	28	1.9	5.2
	28 184	Pinole Creek	8.40	Pin	27	---	---	---

Route Segment	Bridge Number	Name or Description	Post Mile	City	Length (Ft)	Width (Ft)	Sidewalks or Curbs	
							LT	RT
C (Cont.)	28 121	Pinole Valley Road UC	8.51	Pin	116	80	1.9	1.9
	28 143	Hercules OH	9.72	Her	723	88	1.9	1.9
	28 148	Rte 80 4 Sep	10.02	Her	444	104	1.9	1.9
	28 189S	Rte 80 On-Ramp Sep	10.04	Her	365	22	2.0	2.0
	28 151	Willow Avenue UC	10.69	Her	165	100	1.9	1.9
	28 193Y	Rodeo Creek	10.71		23	---	---	---
	28 194	Rodeo Creek	10.73		23	---	---	---
	28 152	California Street O	11.34		220	28	5.2	1.9
	28 155	Refinery Road UC	11.70		31	130	---	---
	28 262	Oleum Pipe UC 1	11.87		22	---	---	---
	28 263	Oleum Pipe UC 2	11.97		22	---	---	---
	28 154	Oleum Ref Road U	12.13		45	---	---	---
	28 149	Cummings Sky O	12.75		284	28	5.2	1.9

Route I-80

EXHIBIT F

COMPARISON OF FUTURE LOS WITH ROUTE CONCEPT

SEGMENT	NO. LANES/LOS			ROUTE CONCEPT		NEEDS	
	1982	1995	2005	Proposed Lanes	LOS	Lanes	Target LOS
A	6-10 F-20	6-10 F-20	8-10 F-15	8-10	F-15	14	D-40
B	8-10 E-30	10 F-20	10 F-15	10	F-15	14-18	D-40
C	6 C-50	8 F-20	8 F-15	8	F-15	14-16	D-40